

Borehole

60-10-02

Log Event A

Borehole Information

Farm : <u>U</u>	Tank : <u>U-110</u>	Site Number : <u>299-W19-75</u>
N-Coord : <u>37,920</u>	W-Coord : <u>75,600</u>	TOC Elevation : <u>667.00</u>
Water Level, ft : <u>96.80</u>	Date Drilled : <u>2/28/1976</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

Cement Bottom, ft. : <u>105</u>	Cement Top, ft. : <u>100</u>
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Borehole Notes:

This borehole was partially cased with 8-in. casing to a depth of 20 ft, and then completed with 6-in. casing. The 8-in. casing was withdrawn, and the space between the 6-in. casing and the 8-in. diameter portion of the borehole was grouted with cement. The bottom 5 ft of the borehole was plugged with cement.

Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>10/1995</u>	Calibration Reference : <u>GJPO-HAN-3</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>11/29/1995</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>39.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>11/30/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>97.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>38.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Spectral Gamma-Ray Borehole
Log Data Report

Page 2 of 2

Borehole

60-10-02

Log Event A

Analysis Information

Analyst : H.D. Mac Lean

Data Processing Reference : P-GJPO-1787

Analysis Date : 5/24/1996

Analysis Notes :

The log of the borehole was completed in two runs. The pre- and post-field verification spectra indicate the logging system was operating properly during data collection. The energy/channel drift observed during the logging runs remained within an acceptable range for the search parameters used by the processing software; multiple energy calibrations were not required to process the data. The channel drift for the high energy portion of the post survey verification spectrum for run 2 did not identify a 2614-keV peak; the peak at 2447 keV was used for calibration of the high energy portion of the spectrum. This slight drift observed has negligible impact on the concentration calculations of lower energy radionuclides such as Cs-137. The monitored portions of the verification spectra indicate no deterioration in the efficiency of the detector. Data overlaps occurred when the same depth intervals were logged between the log runs. The calculated concentrations were within the statistical uncertainty of the measurements, indicating acceptable repeatability.

The casing thickness is presumed to be 0.280 inch (in.), on the basis of published thickness for schedule-40, 6-in. steel casing. Casing-correction factors for a 0.280-in.-thick steel casing were applied during analysis.

Cs-137 was the only man-made radionuclide detected. Cs-137 occurred continuously between the ground surface and a depth of 9 ft. It also was recognized at depths of 10.5 and 13 ft. The concentrations of Cs-137 in the continuous zone ranged from 0.2 to about 4 pCi/g. The maximum concentration of about 4 pCi/g was measured at a depth of 1.5 ft below the surface. In addition, zones of elevated Cs-137 concentration (about 3 pCi/g) were observed at depths of 4 and 7.5 ft below ground surface.

Details regarding the interpretation of the data for this borehole are presented in the Tank Summary Data Report for tank U-110.

Log Plot Notes:

Separate log plots show the man-made (e.g., Cs-137) and the naturally occurring radionuclides (K-40, U-238, and Th-232). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes both the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Westinghouse Hanford Company (WHC) Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data from WHC with no attempt to adjust the depths to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the minimum detection level (MDL). The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.